

## **Desired Future Habitat Conditions**

### **Pool 5A, Mississippi River**

#### *Description of Pool 5A*

Pool 5A is an impoundment of the Mississippi River that resulted from the construction of Lock and Dam 5A. Construction was completed in 1936 as part of the 9-foot channel navigation project. The pool spans 9.7 miles between Lock and Dam 5A near Winona, MN (river mile (RM) 728.4) and Lock and Dam 5 near Minneiska, MN (RM 738.1). Because the dike for Lock and Dam 5 extends northward from RM 738.1, the pool extends on the Wisconsin side to RM 740.8 near Buffalo City, WI. The mainland boundaries for the area are the I & M Rail Link railroad in Minnesota and the Burlington Northern Santa Fe railroad in Wisconsin.

Pool 5A and its floodplain encompass approximately 17,700 acres. The pool has a mix of aquatic habitat types that include tailwaters, contiguous and isolated backwaters, secondary and tertiary channels, and the main channel and main channel border. Most island areas are forested and are dominated by mature even-aged stands of silver maple. There is little or no understory or seedling regeneration.

The aquatic habitat in Pool 5A provides a fishery and mussel resource with characteristics similar to other pools and one that also possesses unique features. The mix of gamefish species includes walleye, sauger, smallmouth bass, largemouth bass, white bass, northern pike, channel catfish, bluegill and black crappie. Non-gamefish species are numerous and include many shiner, darter and minnow species. Commercially sought species include common carp, buffalo, freshwater drum, channel catfish and quillback carpsucker. Paddlefish are a unique fishery; along with other migratory fishes, they are positively influenced by the frequency that the Lock and Dam 5A gates are out of the water allowing for easier inter-pool movements. Native mussel species composition in Pool 5A is similar to many other areas of the river. Native mussels continue to be threatened by zebra mussel colonization.

Pool 5A is part of the Mississippi River Flyway, a major migratory bird corridor. The spring and fall bring songbirds including warblers, vireos and thrushes. Migratory waterfowl, including diving ducks, use open water areas for fall feeding and loafing. Smaller and more secluded areas serve as brood habitat for puddle ducks. Bald eagles concentrate in open water areas during the winter months and also nest at various locations during the summer. A heron rookery also exists.

Submergent and emergent aquatic vegetated areas are important for numerous wildlife species. Furbearers, amphibians, birds and reptiles all rely on these areas.

Grasslands and forested areas harbor a myriad of animal species in Pool 5A. Grasslands are important for numerous birds, mammals, reptiles, furbearers and amphibians. Forested areas include upland and bottomland hardwoods and are important habitat to birds and mammals.

Public land in Pool 5A includes two state wildlife areas and a federal fish and wildlife refuge. The State of Wisconsin owns and manages the 2,173-acre Whitman Dam Wildlife Area. This area is a mix of open water wetlands, backwater lakes, rice ponds, running sloughs and bottomland forests. The State of Minnesota owns and manages the ?-acre Thorp Wildlife Management Area. This area is a mix of bottomland forests, backwater lakes and running sloughs. The pool is also part of the Upper Mississippi River National Wildlife and Fish Refuge that extends 261 miles from Wabasha, MN to just above Rock

Island, IL. The refuge includes acreage acquired by the U.S. Fish and Wildlife Service and land acquired during the 1930s by the U.S. Army Corps of Engineers for the 9-foot channel navigation project.

Pool 5A has several sites routinely dredged to maintain a 9-foot navigation channel. Current dredged material placement sites, along with numerous historic placement sites, are located throughout the pool. Many historic sites are void of vegetation due to harsh growing conditions.

Another disturbance to Pool 5A is the amount of rock that is present. Rock is in the form of railroad grade protection, revetment and wing dams. The pool has one of the highest numbers of wingdams per mile. Given this condition, the habitat in the main channel border is highly altered. Another feature associated with the navigation system is the U.S. Corps of Engineers' Service Base at Fountain City, WI. The area has high levels of PCBs attributed to previous service base activities.

Habitat diversity and habitat quality have been lowered due to island loss, especially in the lower portions of the pool. Island dissection and erosion continues to occur and contributes to declines in aquatic vegetation and floodplain forests.

Tributary influences on Pool 5A are relatively minor with regards to water quality. In Wisconsin, the Waumandee Creek watershed drains approximately 204 square miles, much of which is farmland. Suspended sediment sources include the Zumbro River in Pool 5, whereas bedload sediments can be traced to Pool 4 and the Chippewa River. Both suspended and bedload sediments contribute to losses of aquatic habitat. Several secondary and tertiary channels have seen significant sedimentation since impoundment with some completely filled in.

A portion of the Pool 5A floodplain is isolated from the river due to levees. The levees in the Winona area, constructed for flood control, were most recently reinforced in the mid-1960s.

### *Description of Pool 5A Sub-Areas*

Within Pool 5A, several sub-areas have been identified. These sub-areas are approximated based on hydrology with the boundaries usually being the main channel, a side channel or the mainland of Wisconsin or Minnesota. The following sub-areas have been delineated to facilitate presentation of desired future habitat conditions:

**Whitman Dam Wildlife Area/ Merrick State Park (RM 733.5-740.8)** – The Whitman Dam Wildlife Area / Merrick State Park sub-area is bordered by the main channel to the south, the Lock and Dam 5 dike to the west, and the Wisconsin mainland to the east and north. This State of Wisconsin owned property is a mix of open water wetlands, backwater lakes, rice ponds, running sloughs and bottomland forests. The area includes a stretch of almost 3 miles where the lock and dam 5 dike runs parallel to the main channel; this part of the sub-area actually appears to be upstream of Lock and Dam 5. This results in much of the area above RM 738.1 having water levels and floodplain features very similar to pre-impoundment conditions. However, the Whitman Dam Wildlife Area is still affected by fine sediment deposition.

Fresh water is brought into this sub-area through two culvert systems in the Lock and Dam 5 dike, the Cochrane drainage ditch, and the Waumandee Creek. Another inflow to this sub-area is Devil's Cut, a side channel at RM 736.2. About 40% of the sub-area's flow enters via this side channel.

Although some backwater areas near Merrick State Park are too shallow for over-wintering centrarchids, a few continue to provide wintering habitat. The vegetated backwaters also provide rearing areas for

bluegill, largemouth bass and northern pike. However, island dissection has occurred and allows main channel water and its sediments to enter during high flows.

**Thorp Wildlife Management Area / Straight Slough (RM 731.0-738.0)** – The Thorp Wildlife Management Area / Straight Slough sub-area is bordered by the main channel to the north, the Winona flood control levee to the south, the Minnesota mainland to the west, and Straight Slough to the east. Many secondary and tertiary channels in this sub-area have been altered by side channel closures and sedimentation. The backwater areas continue to support a diverse aquatic vegetation community but are also experiencing sedimentation.

**Twin Lakes (RM 731.0-735.2)** – The Twin Lakes sub-area is bordered by Straight Slough to the south and west and the main channel to the north and east. Island erosion has affected the distribution of aquatic vegetation in the downstream section. Island dissection has introduced flow into some backwater lakes in the upstream portion of the sub-area. As with many other areas in Pool 5A, sedimentation is slowly reducing habitat quality for vegetation and its associated fish and wildlife.

**Wild's Bend / Betsy Slough (RM 729.7-732.5)** – The Wild's Bend / Betsy Slough sub-area is bordered by the main channel to the south, Pap Slough to the west, and the Wisconsin mainland to the north and east. The U.S. Fish and Wildlife Service manages the entire sub-area as a closed area during the fall waterfowl migration. Much of the terrestrial habitat has been altered by placement of sand from main channel dredging.

Betsy Slough backwaters have experienced sedimentation, island erosion and island dissection. The island erosion and dissection in this sub-area has not impacted habitat quality as it has in other areas of lower Pool 5A. Although a winter fishery exists near the lower end of Betsy Slough, shallow water limits most of this backwater to an open water fishery. The depths and vegetation also provide good habitat conditions for migratory waterfowl.

**Polander Lake (RM 728.4-731.8)** – The Polander Lake sub-area is bordered by the Twin Lakes sub-area to the west, the main channel to the north and east, and the Lock and Dam 5A dike and Winona flood control levee to the south. Straight Slough is a major depth feature of the Polander Lake sub-area. Straight Slough runs parallel to the Winona flood control levee and exits via the Lock and Dam 5A spillway. This spillway does not carry the entire flow of Straight Slough; this causes an eddy flow pattern through Polander Lake. Erosion has eliminated many islands in Polander Lake. This has caused a loss of terrestrial habitat and also played a role in the loss of submergent and emergent aquatic vegetation. The Polander Lake HREP protected the remaining islands, closed an island breach in Pap Slough, revegetated a historic disposal site and constructed three islands.

**Winona Backwaters (RM 727.1-731.0; 728.4-731.0 in Pool 5A)** – The Winona Backwaters sub-area is surrounded by a flood control levee with the cities of Goodview, MN and Minnesota City, MN on the south and west and Winona, MN to the north and east. This area was isolated from the Mississippi River in 19???. Development, sand and gravel operations and urban runoff impact the sub-area and threaten habitat quality. However, present plant and animal communities are good, even though the connection to the Mississippi River is limited.

### ***Summary of Potential Actions to Achieve Desired Future Habitat Conditions***

Our goal is to protect, enhance or restore diversity. The diversity may be biological, affecting the presence or absence of plant and animal species and their populations. The diversity is also habitat related, affecting physical features found both above and below the water's surface.

**1.) Maintain existing quality habitat.**

A key to the desired future is to protect and maintain existing terrestrial and aquatic habitat. Some areas within the pool are considered as quality habitat for a variety of species. Maintenance of existing quality habitat may be as simple as leaving it alone and monitoring it's condition. Specific actions would be identified if long-term declines in habitat quality in the area are noticed.

The Whitman WMA/Merrick State Park sub-area, for example, contains many habitats which will be maintained.

**2.) Support watershed management programs.**

Positive land use in the tributary watersheds may be encouraged that would reduce sediment, nutrient and other pollutant inputs into Pool 5A. Urban areas may also be included.

**3.) Manage water levels to improve aquatic habitat.**

Restoring periodic low water levels may be further investigated as one of the tools stimulate the recolonization of aquatic plant communities, especially emergents.

**4.) Protect and restore islands.**

Island stabilization in Pool 5A may be undertaken to reduce the rate of island erosion and island dissection. This may help maintain a diversity of depths, velocities and substrate. It may also keep selected backwater areas free from flow.

Island formation may be promoted the Twin Lake area and Polander Lake by allow sand bar development or the positioning of "seed islands." Where necessary, islands may be constructed to improve terrestrial and aquatic habitats. The constructed islands may be oriented to promote scour and sediment deposition to increase depth, velocity and substrate diversity. The islands may improve water quality conditions and promote the establishment and maintenance of aquatic vegetation.

**5.) Increase depth diversity in channels and backwaters.**

Depth diversities may be maintained, reduced, eliminated, enhanced or restored. Dredging, directing flows or other techniques may be used.

Efforts will be made throughout the pool to increase secondary and tertiary channel habitat. Maintenance and formation of these channels will consider a variety of factors aimed at providing for a diversity of habitats (undercut banks, mud banks, snags, etc.) and substrate types. Where feasible, restored channels will be defined by land border to further diversify the habitat these channels will provide. Dredging, directing flows or other techniques may be used to optimize depth diversity.

Portions of the Twin Lakes, Betsy Slough and Whitman WMA/Merrick State Park sub-areas will be evaluated to determine the feasibility of increasing depths in backwater lakes. The goal would be to improve over-wintering habitat conditions for bluegills and largemouth. Dredged material may be used to improve terrestrial habitat or construct islands.

**6.) Manage river flows and connectivity to improve aquatic habitat.**

Side channel closures, wingdams and other structures may be altered to modify flows to restore spatial connectivity of habitats.

**7.) Work cooperatively with private property owners.**

There are several areas within the Mississippi River floodplain and the majority of the tributary watersheds which are privately owned. Maintaining and improving habitat within the floodplain of the Mississippi is dependent on a long-term commitment to provide resources to private landowners to improve water quality, reduce erosion and sedimentation, and improve habitat conditions on land within the floodplain. Various approaches and techniques will be evaluated and implemented to work cooperatively with private property owners. Some of the tools include: voluntary measures, land owner incentives, easements from willing owners and purchase of land from willing sellers.

With respect to Pool 5A, lands may be acquired through purchase or conservation easements from willing owners within the project boundary of the Whitman Dam Wildlife Area.

**8.) Manage floodplain forest and prairie communities for diversity and quality.**

Managing terrestrial plants may focus on maintaining, enhancing and restoring forest and prairie communities. Management actions may include restoring historic dredged material placement sites with native plants; decreasing the dominance of reed canary grass; and reducing or eliminating purple loosestrife by continuing control methods and implementing new ones. Privately owned property may be managed through landowner education, incentives and conservation easements.